CV SUMMARY – GIANLUCA BARDARO

1. GENERAL INFORMATION

DATE OF BIRTH 16/02/1989

EDUCATION

2020 **PhD Degree** in Information Technology, Politecnico di Milano, Milano (IT).

2014 **Master of Science Degree** in Computer Engineering, Politecnico di Milano, Milano (IT) (110 cum laude/110).

CAREER

2020 – present **Research Associate**, The Open University, Knowledge Media Institute, Milton Keynes (UK)

2019 – 2020 **Research Assistant**, The Open University, Knowledge Media Institute, Milton Keynes (UK)

2017 – 2018 **Visiting Student**, The Open University, Knowledge Media Institute, Milton Keynes (UK)

2015 – 2020 **Ph.D. Student**, Politecnico di Milano, Milano (IT)

2015 – 2015 **Research Assistant** (Assegnista di ricerca), Politecnico di Milano, Milano (IT)

RESEARCH INTERESTS

- **Robotics:** simulation, off-road robots, service robots, control theory
- **Software engineering:** model-based design, code generation, component-based architectures
- **Artificial intelligence:** semantic map, knowledge representation

2. QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION

PRODUCTIVITY AND IMPACT METRICS

- **Scientific Productivity: 24** publications (**18** entries on Scopus, **31** co-authors according to Scopus):
  - Author/Co-author of **2** top ranked **Q1** journal papers based on SCIMAGO (including **International Journal of Social Robotics**, and **Control Engineering Practice**)
  - Author/Co-author of **16** scientific publications on peer-reviewed conferences including **1** top-level **A++/A+ Class 1** conferences according to GII-GRIN-SCIE conf. ranking (including **IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)**)
- **Publication Impact:** Based on Google Scholar: h-index **7** i-10 index **4** citations **120**
  Based on Scopus: h-index **5** citations **58**

TALKS AND SEMINARS

September 2020	"Personal robotic assistants: past, present, and future" at AI and Smart Tech in the Home Organized by Medilink East Midlands (UK)
October 2019	"SciRoc – Lessons learned and what's next" at NatWest Incubator (UK) organized by Milton Keynes AI (MKAI)
May 2019	*"ROS Fundamentals"* at the SemWeb Uitje "Robots, Language and Theory of Mind" organized by VU Amsterdam
July 2017	*"Robot capabilities and models"* at the Knowledge Media Institute
June 2017	*"A Model-Based Approach to Develop Robotics Applications with Component-Based Middlewares"* at the ASTRA conference organized by ESA

COMMISSIONS OF TRUST

2018 – present **Program Committee Member**, IEEE International Conference of Robot Computing

3. TEACHING ACTIVITIES

Institution name	Course name	Credits	Role	Reference Study Course	Time period	Students Evaluation
Politecnico di Milano	Robotics	5	Teaching assistant	Computer Science and Engineering	2016/2017	Medium
Politecnico di Milano	Robotics	5	Teaching assistant	Computer Science and Engineering	2015/2016	Medium

SUPERVISION OF MASTER STUDENTS

2015 – present **Co-advisor** of **4** Master Students in Computer Science and Engineering, Politecnico di Milano, Milano

2018 – present **Co-advisor** of **1** Master Students in Automation and Control Engineering, Politecnico di Milano, Milano

4. PARTICIPATION IN COMPETITIVE RESEARCH PROJECTS

Project Acronym	Time Period	Funding Institution	Funding Scheme	Role of the applicant	Budget for the applicant's institution
REPHE	2021-present	The Open University	RES Innovation Project	Co-investigator	£ 39 867
Gatekeeper	2020-present	European Commission	H2020	Task leader	€ 900 343
SciRoc	2019-2020	European Commission	H2020	Participant	€ 120 000
Plug&Bench	2018-2019	European Commission	H2020 (Cascade funding)	Participant	€ 129 375
Grape	2016-2018	European Commission	FP7 (Cascade funding)	Participant	€ 134 400

5. TWELVE MOST RELEVANT PUBLICATIONS[1]

1. Bardaro, Gianluca, Alessio Antonini, and Enrico Motta. *"Robots for Elderly Care in the Home: A Landscape Analysis and Co-Design Toolkit."* International Journal of Social Robotics (2021): 1-25. https://doi.org/10.1007/s12369-021-00816-3 **SJR: Q1**

   I am one of the main contributors of the paper. I wrote the survey on previous healthcare robots and provided the robotics background to create the co-design toolkit. I also handled the review and rebuttal process.

2. Chiatti, Agnese, Gianluca Bardaro, Emanuele Bastianelli, Ilaria Tiddi, Prasenjit Mitra, and Enrico Motta. *"Task-agnostic object recognition for mobile robots through few-shot image matching."* Electronics 9, no. 3 (2020): 380. https://doi.org/10.3390/electronics9030380 **SJR: Q2**

   I designed and developed the architecture of the autonomous robot used in this work. Moreover, I provided support in the data collection, data preparation and experimental phases. I also contributed to the review and rebuttal process.

3. Bardaro, Gianluca, Andrea Semprebon, Agnese Chiatti, and Matteo Matteucci. *"From Models to Software Through Automatic Transformations: An AADL to ROS End-to-End Toolchain."* In

[1] For journal paper the Scimago Journal & Country Rank (SJR) quartiles is reported. For conference papers the class from the GII-GRIN-SCIE Rating is reported.

2019 Third IEEE International Conference on Robotic Computing (IRC), pp. 580-585. IEEE, 2019. https://doi.org/10.1109/IRC.2019.00118

I am the main contributor of this paper. The toolchain presented in this work is one of the outputs of my PhD thesis: an automatic process to generate ROS code from models. Moreover, I co-supervised the master student co-author of this paper.

4. Bardaro, Gianluca, Mohamed El-Shamouly, Giulio Fontana, Ramez Awad, and Matteo Matteucci. *"Toward model-based benchmarking of robot components."* In 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 1682-1687. IEEE, 2019. https://doi.org/10.1109/IROS40897.2019.8967682 **GII-GRIN-SCIE Class 1 (A+)**

   I am one of the main contributors of the paper. I developed the use cases presented in the manuscript. The main idea of this work is an extension of the model-based approach developed during my PhD applied to benchmarking of robot components.

5. Bardaro, Gianluca, Luca Bascetta, Eugenio Ceravolo, Marcello Farina, Mauro Gabellone, and Matteo Matteucci. *"MPC-based control architecture of an autonomous wheelchair for indoor environments."* Control Engineering Practice 78 (2018): 160-174. https://doi.org/10.1016/j.conengprac.2018.06.020 **SJR Q1**

   I designed and developed the architecture of the autonomous wheelchair used in this work. I also performed most of the experiment presented. Additionally, I developed the ROS-compatible MPC plugin that controlled the wheelchair.

6. Bardaro, Gianluca, Andrea Semprebon, and Matteo Matteucci. *"A use case in model-based robot development using AADL and ROS."* In Proceedings of the 1st International Workshop on Robotics Software Engineering, pp. 9-16. 2018 https://doi.org/10.1145/3196558.3196560

   I am the main contributor of this paper. The use case presented in this work is one of the outputs of my PhD thesis: a complete robot architecture developed using a model-based approach. Moreover, I co-supervised the master student co-author of this paper.

7. Tiddi, Ilaria, Emanuele Bastianelli, Gianluca Bardaro, and Enrico Motta. *"A User-friendly Interface to Control ROS Robotic Platforms."* In International Semantic Web Conference (P&D/Industry/BlueSky). 2018. http://ceur-ws.org/Vol-2180/paper-70.pdf

   This is an interdisciplinary work between semantic technologies and robotics. I designed and developed the architecture of the robots used in this paper. Additionally, I developed the abstraction layer between the robot and the web interface. I also contributed to the writing and review process.

8. Bardaro, Gianluca, and Matteo Matteucci. *"Using AADL to model and develop ROS-based robotic application."* In 2017 First IEEE International Conference on Robotic Computing (IRC), pp. 204-207. IEEE, 2017. https://doi.org/10.1109/IRC.2017.59

   I am the main contributor of this paper. The use of AADL to create models of robotic components as presented in this work is the foundation and one of the key elements of my PhD.

9. Tiddi, Ilaria, Emanuele Bastianelli, Gianluca Bardaro, Mathieu d'Aquin, and Enrico Motta. *"An ontology-based approach to improve the accessibility of ROS-based robotic systems."* In Proceedings of the Knowledge Capture Conference, pp. 1-8. 2017. https://doi.org/10.1145/3148011.3148014 **GII-GRIN-SCIE Class 3 (B)**

   This is an interdisciplinary work between semantic technologies and robotics. In this work, an ontology is presented to define high-level robotic capabilities. I provided the necessary robotic background to support the definition of these capabilities. I also contributed to the writing and review process.

10. Roure, Ferran, Germán Moreno, Marcel Soler, Davide Faconti, Daniel Serrano, Pietro Astolfi, Gianluca Bardaro, Alessandro Gabrielli, Luca Bascetta, and Matteo Matteucci. *"GRAPE: Ground Robot for vineyArd Monitoring and ProtEction."* In Iberian Robotics Conference, pp. 249-260. Springer, Cham, 2017. https://doi.org/10.1007/978-3-319-70833-1_21

    I provided direct support during field activities and the experimental phases of this work. In

particular in the implementation and configuration of mapping and navigation functionalities. Moreover, I co-supervised the master student co-author of this paper.

11. Bardaro, Gianluca, Luca Bascetta, Francesco Casella, and Matteo Matteucci. *"Advancement in multi-body physics modeling for 3d graphical robot simulators."* In International Workshop on Modelling and Simulation for Autonomous Systems, pp. 189-195. Springer, Cham, 2016. https://doi.org/10.1007/978-3-319-47605-6_15

    I am one of the main contributors of the paper. I developed the software that implements the bridge between the 3D graphical simulator (i.e., Gazebo) and a Modelica-based simulator. I also contributed to the writing and review process.

12. Bardaro, Gianluca, Davide Antonio Cucci, Luca Bascetta, and Matteo Matteucci. *"A simulation based architecture for the development of an autonomous all terrain vehicle."* In International conference on Simulation, Modeling, and Programming for Autonomous Robots, pp. 74-85. Springer, Cham, 2014. https://doi.org/10.1007/978-3-319-11900-7_7

    I am the main contributor of this paper. I designed and developed the model of the simulated robot, the software architecture controlling the autonomous all-terrain vehicle and the seamless bridge between the simulation and the control system.

6. LIST OF THREE PEERS WHO COULD PROVIDE A REFERENCE LETTER

PROF. ENRICO MOTTA - Full Professor of Knowledge Technologies, Knowledge Media Institute, The Open University (Milton Keynes, UK). enrico.motta@open.ac.uk

DR. ILARIA TIDDI - Assistant Professor, Faculty of Science, Vrije Universiteit Amsterdam (Amsterdam, NL). i.tiddi@vu.nl

DR. DAVIDE CUCCI - Senior Research Associate, Research Centre for Statistics, Université de Genève (Geneva, CH). davide.cucci@unige.ch